

Translation

PATENT COOPERATION TREATY

PCT/EP2003/010178



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference G2398 PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/010178	International filing date (<i>day/month/year</i>) 12 September 2003 (12.09.2003)	Priority date (<i>day/month/year</i>) 12 September 2002 (12.09.2002)
International Patent Classification (IPC) or national classification and IPC H01L 21/00		
Applicant SÜSS MICROTEC LABORATORY EQUIPMENT GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 13 April 2004 (13.04.2004)	Date of completion of this report 08 December 2004 (08.12.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/010178

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☒ the description:
 pages _____ 1-5 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages _____ 1-22 _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the drawings:
 pages _____ 1/2-2/2 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	3-15, 18, 19, 21, 22	YES
	Claims	1, 2, 16, 17, 20	NO
Inventive step (IS)	Claims		YES
	Claims	1-22	NO
Industrial applicability (IA)	Claims	1-22	YES
	Claims		NO

2. Citations and explanations

Reference is made to the following documents:

- D: WO 02 27764 A (KROENINGER WERNER; HECHT FRANZ (DE); LUTZKE MELANIE (DE); INFINEON) 4 April 2002 (2002-04-04)
- D2: DE 197 07 771 A (MITSUBISHI ELECTRIC CORP) 2 January 1998 (1998-01-02), cited in the application
- D3: DE 196 10 112 A (TECH GMBH ANTRIEBSTECHNIK UND) 18 September 1997 (1997-09-18), cited in the application
- D4: EP-A-0 660 377 (ENYA SYSTEMS LTD) 28 June 1995 (1995-06-28).

1. Novelty (PCT Article 33(2))

1.1 The present application does not meet the requirements of PCT Article 33(2) because the subject matter of claims 1, 2, 16, 17 and 20 is not novel.

1.2 Document D discloses a device and a method for the planar connection of two wafers 1 and 2 and using a vacuum chamber 3 (see figure 1, claim 1 and abstract). Claim 1 is therefore not novel, since apart from the above technical features claim 1 contains only vague functional features,

such as the dimensions of the chamber, which are determined by objects 1 and 2 and the effect to be achieved, that is, for it to be possible to rapidly evacuate the chamber 3. Even the term "rapid" itself is relative and therefore does not meet the requirements of PCT Article 6. Moreover, document D describes the connecting of two wafers that are parallel to each other (see figure 1), and the device of document D has an object support 4 but not a lid 18 which can be positioned on the object support in a vacuum-tight manner. The above technical features of document D therefore also anticipate the method according to claim 15; in addition, page 7 states that the objects 1 and 2 are interconnected using an adhesive film (see page 7, lines 21-25).

1.3 In addition to the technical features cited in document D, document D2 describes a method and a device for bonding wafers to a carrier substrate (see abstract, column 5 to column 7, and figures 1a-2b and 5). Consequently, the subject matter of claim 20 cannot be considered novel.

1.4 Documents D3 and D4 in turn disclose methods and devices for connecting a first and a second object, as is claimed in a relatively vague and unclear manner (within the meaning of PCT Article 6) in claims 1 and 16 (see document D3, abstract and figures 1-3; and document D4, figure 1). In the light of document D4, the subject matter of claim 2 is likewise not novel (PCT Article 33(2)) because document D4 discloses a lid 4 which can be placed on to the object support in a vacuum-tight manner and has a device for holding the object 1 (vacuum chuck 3). The vacuum chamber 3 is formed when the lid 4 is placed onto the carrier substrate 5 and its size is adapted to the dimensions of the objects to be connected; the lid 4 is

movable in the sense of the subject matter of claim 2 of the present application (see column 3, lines 16-31 and 36-47).

2. Inventive step (PCT Article 33(3))

Dependent claims 3-15, 18, 19, 21 and 22, that is, the claims having subjects that meet the requirement of novelty, do not contain any features which, combined with the features of any claim to which they refer, meet the PCT requirements for inventive step, because they contain only modifications of known devices and methods obvious to a person skilled in the art (see documents D-D4 and items 1.1 to 1.4 above), which an expert in the technical field in question would make without thereby having to exercise inventive skill.

3. Clarity (PCT Article 6)

3.1 As already mentioned in item 1.2 above, claims 1 and 16 do not meet the requirement for clarity since both claims contain relative terms ("*rapid*") and functional definitions ("*vacuum chamber (3), whose dimensions are determined by the dimensions of the objects (1, 2)*"). In addition, the product claim 1 contains a functional definition which attempts to describe a technical effect to be achieved, that is, the fact that the vacuum chamber should be dimensioned such that it can be evacuated rapidly. Consequently, the subject matter is not defined by technical, structural features but by an unclear functional definition, which is contrary to the requirements of PCT Article 6.

3.2 Claims 14 and 19 are not clear because they specify neither method steps nor technical features indicating how

a plurality of first (1) and second (2) objects are to be connected. These claims are therefore likewise unclear within the meaning of PCT Article 6.